Poster 2. A comparative study of clump vs. row planting geometry on dryland maize yield and harvest index.

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Water for dryland grain production in the Texas Panhandle is limited. Agronomic practices such as reduction in plant population and change in sowing time help increase yield potential. Tiller formation leads to more vegetative growth and less yield. I hypothesized that clump planting maize (*Zea mays* L.) under dryland would reduce environmental stress, tillering, and vegetative growth and increase grain yield and harvest index by moisture conservation. Clump plantings were studied during 2008 at Bushland, TX. Treatments were two plant populations (30,000 and 40,000 pl/ha) and three geometries 3 PPC (plants/clump), 4 PPC, and ESP (equally spaced plants). All treatments were replicated three times in rows 75 cm apart. Precipitation during the growing season was 209 mm. Harvest index, 200-seed mass, and number of harvested ears were significantly greater and leaf area index (LAI) is lower in clumps compared to ESP. The treatment with 3 PPC spaced 1.33 m apart (40,000 pl/ha) had the greatest harvest index of 0.46 due to more productive ears. The number of unproductive ears in ESP from total number of ears produced was 25,100/ha, which was 87% of the total ears (54,100/ha). The leaf area index was significantly greater (17%) in ESP compared to 3 PPC. Grain yield and above-ground biomass were not significant. Lower populations had greater harvest index and seed mass values than did greater populations. Thus, although grain yields were not greater in clumps in 2008, increased seed mass, harvest index, number of harvested ears, and decreased LAI values suggest clump geometry may be a good strategy for conserving water under dryland conditions.

Poster 3. Mapping of QTL associated with leaf cuticular waxes in wheat (Triticum aestivum L.).

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Leaf cuticular waxes in plants provide a protective barrier to biotic and abiotic stresses. The objective of this study was to identify quantitative trait loci (QTL) associated with leaf waxes in wheat. We utilized a 120 recombinant inbred line (RIL) population derived from the cross of 'Halberd' and 'Karl 92' for mapping leaf cuticular waxes. Plants were grown in the greenhouse at 25°C/20°C day/night temperature regime. Leaf wax content was estimated at 10 days after pollination (DAP) from the flag leaf. The flag leaf temperature and leaf width was measured in the greenhouse. The RIL population also was evaluated for yield and yield components. A variation in leaf wax content was observed between the parent lines with 'Halberd' having higher wax content. We have 190 SSR markers polymorphic between the parent lines. Preliminary QTL analysis identified QTL associated with leaf wax on chromosomes 3B, 4A, and 5D. A nonwaxy locus was identified in chromosome 1B that corresponds to a previously identified spike non-glaucousness locus.